

HEALTHCARE, A FLAGSHIP OF FRENCH INDUSTRY

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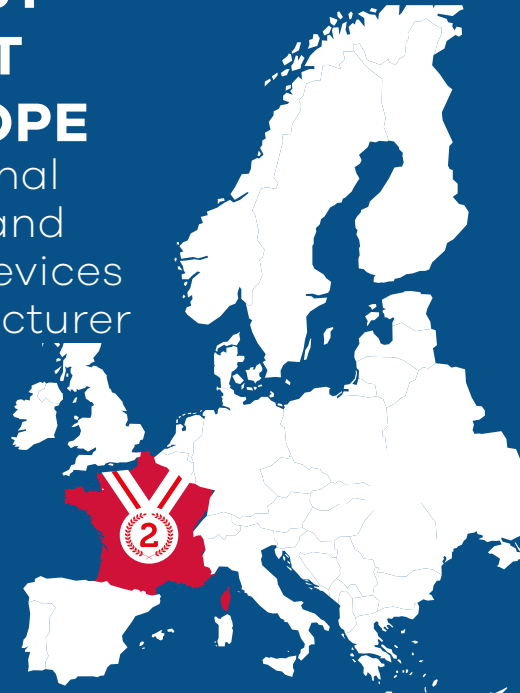
KEY FIGURES

13 NOBEL
prizes
in medicine



FRANCE IS THE SECOND LARGEST MARKET IN EUROPE

for medicinal products and medical devices at manufacturer prices



*Source: LEEM, MedTech Europe

MEDICINAL PRODUCTS



- 240 businesses
- Revenues: €54 billion, including 50% through exports
- 99,000 employed

*Source: LEEM

INNOVATIVE SMES

- 720 health and biotechnologies SME businesses
- 886 MedTech and diagnostic SME businesses



*Source: France Biotech

MEDICAL DEVICES

- 1,343 businesses
- Revenues: €28 billion, including €8 billion through exports
- 85,000 employed



*Source: SNITEM

Healthcare, a flagship of French industry

Healthcare has always been a central industrial activity in the French economy, and is at the heart of a world-renowned research, public health and healthcare ecosystem. Today, there are more than 3,000 healthcare businesses in France, generating revenues of nearly €90 billion.¹

Within these healthcare industries, the 247 pharmaceutical businesses hold a prominent role, being responsible for €54 billion in revenues and employing nearly 100,000 people.² This industry is very internationally focused, achieving half of its revenues through exports.

France is the fifth large producer of medicinal products in the European Union.³ Furthermore, France has the second largest number of healthcare biotechnology businesses (720), of which the great majority are SMEs and startups.⁴

The medical devices sector has more than 1,300 businesses (of which nearly 900 are innovative SMEs in MedTech and diagnostics),⁵ of which 92% are micro-enterprises and SMEs. These businesses generate revenues of nearly €30 billion and employ nearly 85,000 people. The number of businesses has grown very strongly in recent years, from 1,080 in 2011 to more than 1,340 businesses in 2017.⁶

France is the fifth largest market in world and the second largest in Europe for both medicinal products for human use and medical devices.⁷

Strategic Council of Healthcare Industries (CSIS)¹ - Trade Organization of Medical Devices Businesses (LEEM)² - European Federation of Pharmaceutical Industries and Associations (EFPIA)³ - France Biotech⁴ - Businesses with less than 250 employees, whose R&D spending amounts to at least 15% of their total expenses⁵ - National Association of the Medical Technologies Industry (SNITEM)⁶ - Trade Organization of Medical Devices Businesses (LEEM), MedTech Europe⁷

FRENCH HEALTHCARE INDUSTRIES FOCUSED ON INNOVATION

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FRENCH HEALTHCARE INDUSTRIES FOCUSED ON INNOVATION

Whether it is through the discovery of the first rabies vaccine by Louis Pasteur in 1885, or the development of the robotic surgeon Rosa by the company Medtech, France has always been at the cutting edge of innovation in the healthcare sectors.

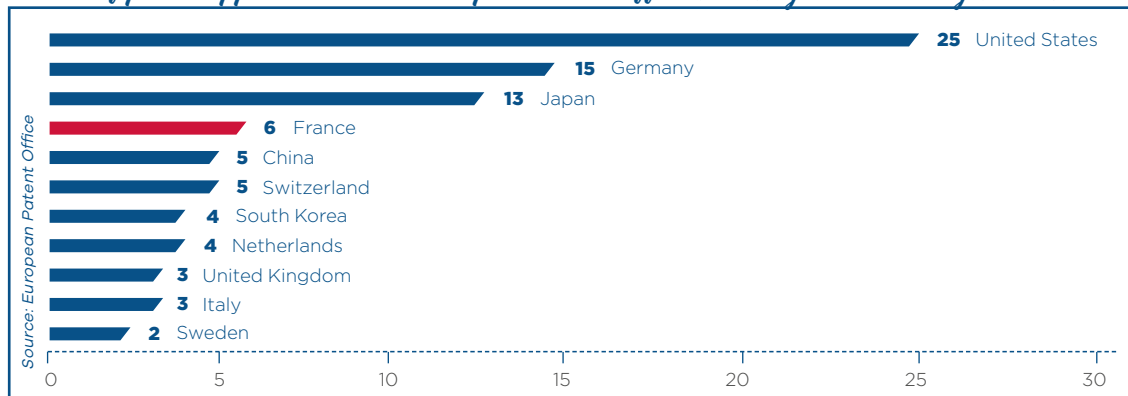
RENOWNED MEDICAL EXCELLENCE

France's medical research stands out for its excellence. **No fewer than 13 recipients of the Nobel Prize for medicine are French**, while numerous medical world firsts have taken place in France, such as the first cord blood transplant in 1988; the first carotid stent implant in 1990; the first partial face transplant in 2005; the first Carmat artificial heart implant in 2013; or the

removal of a cerebral tumor from an awake patient using virtual reality glasses.

France is the fourth largest holder of patents for all sectors combined with the European Patent Office, after the United States, Japan and Germany, and was responsible for 6% of all patents filed in 2018. **In the pharmaceuticals sector, France is ranked third after the United States and Germany**, but ahead of Switzerland. These figures confirm that France is a leading innovative nation.

% Share of patent applications to the European Patent Office (EPO) by source country (2018)



GLOBALLY ACCLAIMED RESEARCH CENTERS

French research organizations are among the best in the world.

France and the United States are the only two countries to have organizations in Scimago's top 15 healthcare research institutes. For France, the French National Institute for Health and Medical Research (*Institut national de la santé et de la recherche médicale* - INSERM) is ranked second, while Assistance Publique - Hôpitaux de Paris (AP-HP) is in 11th place. **INSERM is also the leading patent applicant with the European Patent Office (EPO) in the pharmaceutical sector**, and the fourth leading patent applicant (but the leading academic institution) for biotechnologies.

The French National Center for Scientific Research (*Centre national de recherche scientifique* - CNRS) is ranked second among world research organizations by the Nature Index 2018 due to the large amount of work published by CNRS researchers in acclaimed journals.

The French Atomic Energy and Alternative Energy Commission (*Commissariat à l'énergie atomique et aux énergies alternatives* - CEA) meanwhile is part of the 100 top organizations for innovation, as ranked by Clarivate Analytics in its Derwent Top 100 Global Innovators 2018-19.

INSERM:



- 2nd leading healthcare institute in the world
- #1 academic depositor of patents in pharmaceuticals and biotechnologies in Europe

*Source: Scimago, EPO

Sanofi, a French innovation champion

R&D spending

- ◆ 1st business in France
- ◆ 6th pharmaceutical business in the world
- ◆ 19th business in the world

For the number of patents filed with the European Patent Office, it was ranked

- ◆ 5th for biotechnologies
- ◆ 6th for medical technologies
- ◆ 10th for pharmaceuticals

A researcher from INSERM is finalist in the EPO European Inventor Award 2019

Jérôme Galon, a researcher at INSERM, has developed Immunoscope®, a diagnostic tool which can help medical staff to predict the chances of recovery and risks of relapse in cancer patients based upon the strength of their immune response. Immunoscope® uses digital images of tumor samples and advanced software to measure the number of positive immune cells found at tumor sites. Its results have improved the accuracy of cancer prognosis and helped tailor therapies to individual patients.

Numerous medical world firsts carried out in France

- 1st insulin pump transplant (1981)
- 1st cord blood transplant (1988)
- 1st carotid stent implant (1990)
- 1st computer-assisted open heart operation (1998)
- 1st face transplant (2005)
- 1st use of an autonomous artificial pancreas in everyday life (2011)
- 1st Carmat artificial heart implant (2013)
- 1st implant of a ceramic sternum (2015)
- 1st removal of a cerebral tumor from an awake patient using virtual reality glasses (2016)
- etc.

SUBSTANTIAL R&D INVESTMENTS

With gross domestic expenditure on R&D (GERD) of €50 billion in 2017, **France was the second leading country in Europe after Germany for the amount it spent on R&D, all sectors combined**, and was ranked sixth in the world.¹

Healthcare industry businesses invest strongly in R&D. The pharmaceutical industry is the third leading sector for business enterprise R&D expenditure (BERD) in France, after the automotive and aerospace industries. Pharmaceutical businesses committed €3 billion to gross domestic expenditure on R&D in 2017, or nearly 13% of all business enterprise R&D expenditure by all manufacturing industries.²

By integrating their external spending, **the R&D effort by these businesses was €4.5 billion in 2015, or nearly 10% of their revenues**, which is a similar proportion to the automotive industry.³

France was the fourth largest R&D spender among European countries (third among European Union

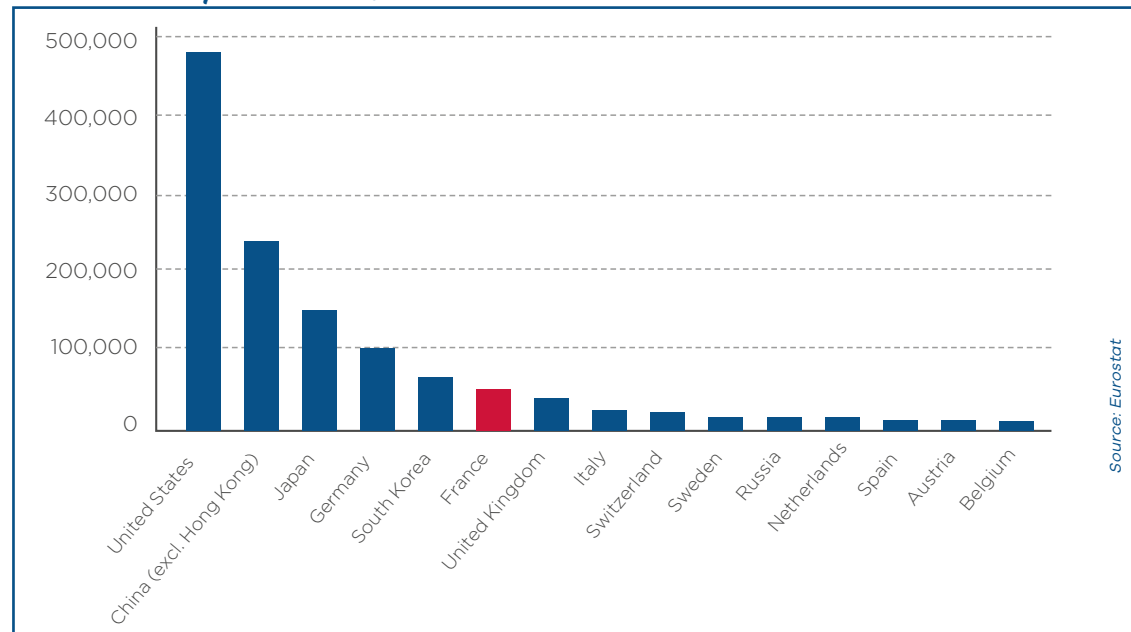
member states) in the pharmaceutical sector in 2016, after Switzerland, the United Kingdom and Germany.⁴

Pharmaceutical businesses employ nearly 18,000 people in R&D activities, including 10,000 researchers.⁵ R&D personnel account for 18% of all the workforce in this sector.

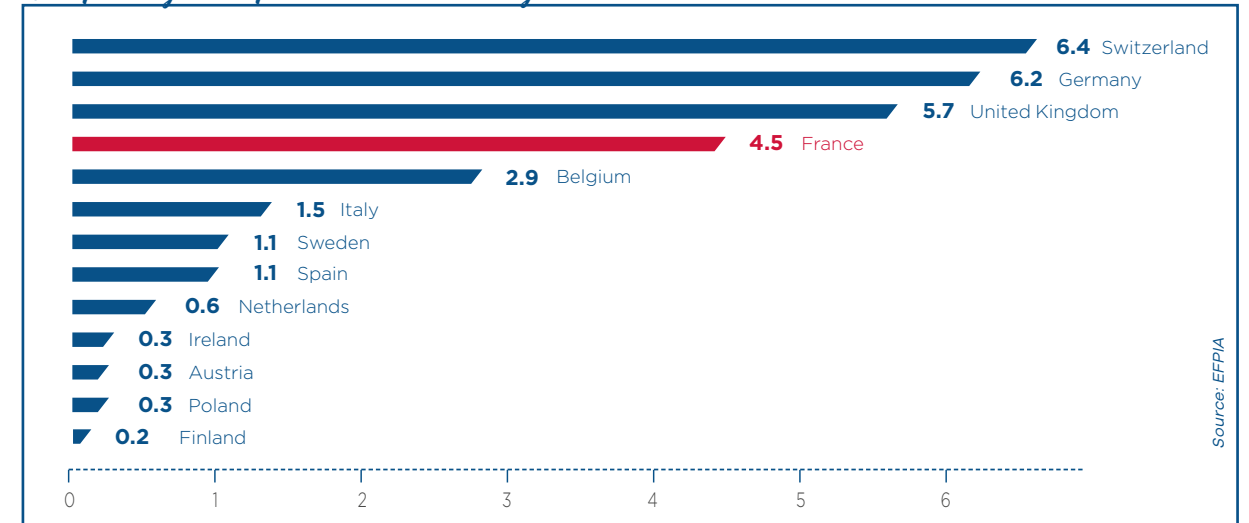
Sanofi is the French business that invested the most in R&D in 2017 and 2018 in all sectors. As such, it is part of the 25 businesses that spent the most on R&D worldwide in 2017/2018,⁶ with €6.6 billion invested in 2018, or 15% of revenues. In 2018, three other businesses from the healthcare industries was part of the 25 largest investors in R&D in France: Biomérieux (€370 million), Ipsen (€320 million) and Essilor (€260 million).⁷

In the medical devices sector, more than half of all businesses had R&D operations and nearly 13% of all businesses were exclusively active in R&D.⁸ Moreover, at a European level the field of medical technologies was the leading field for filing patents with the European Patent Office. Essilor, a world leader in the corrective lens field, was cited as one of the 100 most innovative businesses in the world in 2018 by Forbes.

Gross domestic expenditure on R&D (2017) (€ million)

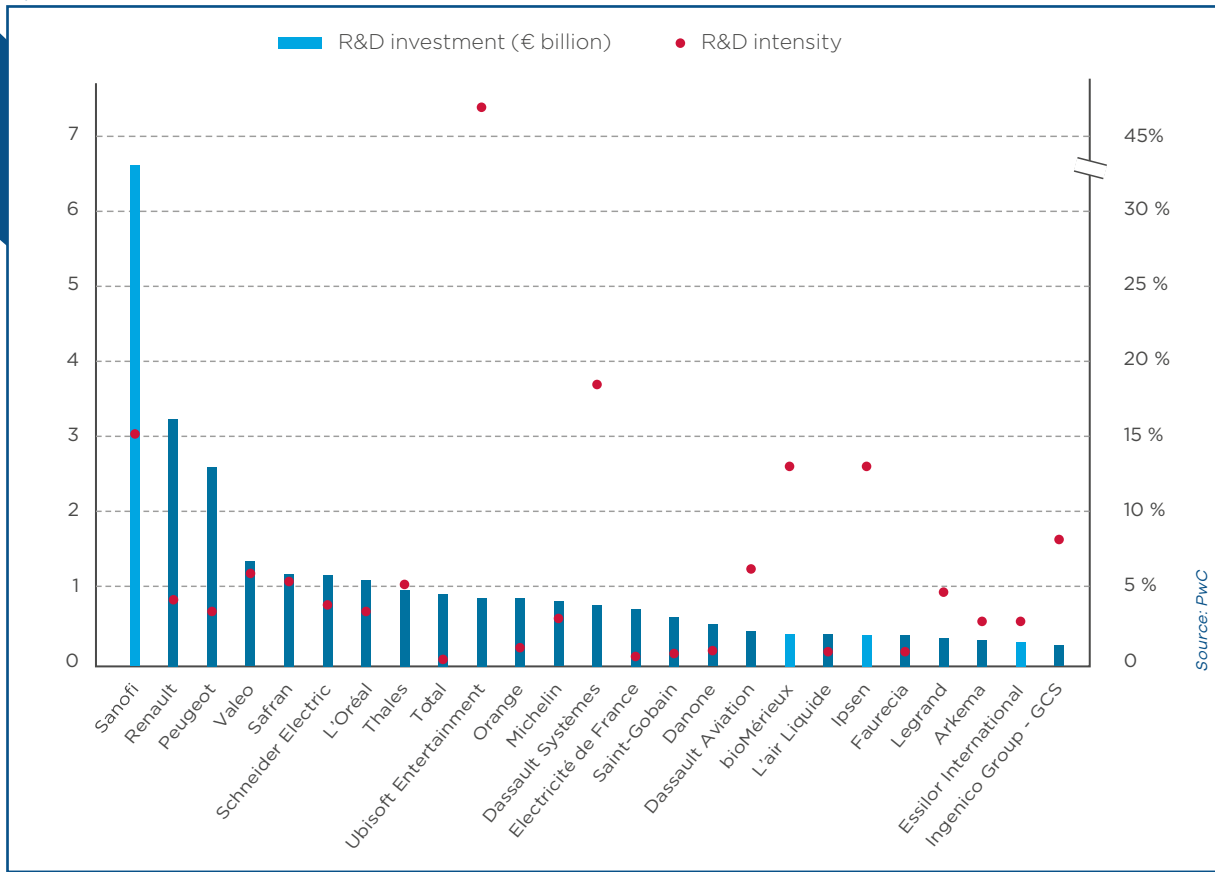


R&D spending in the pharmaceutical industry (2016) (€ billion)

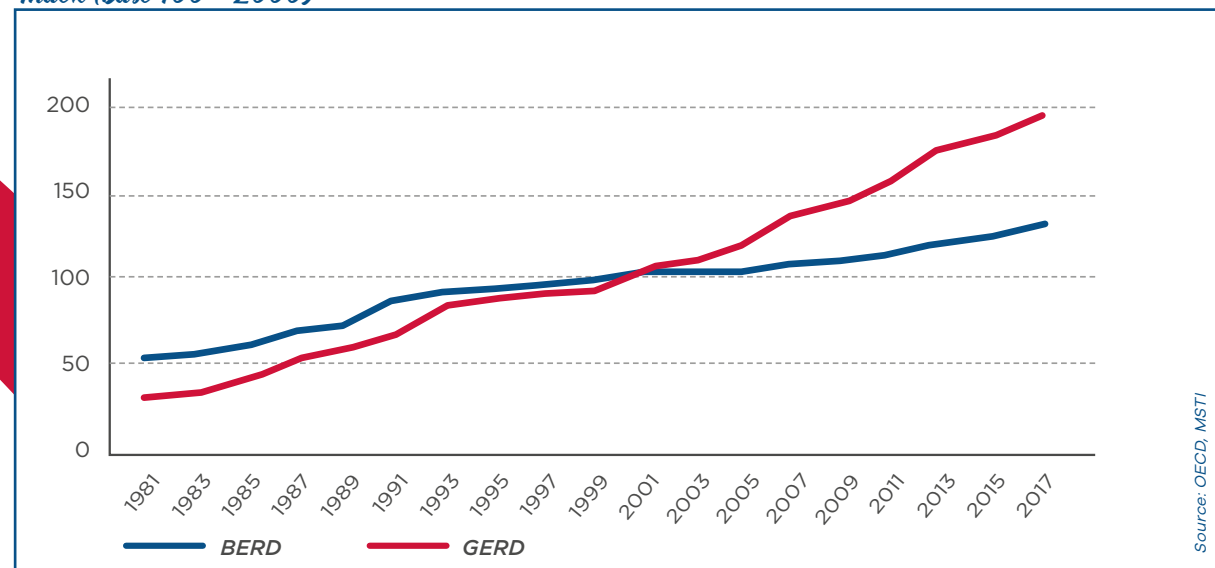


European Patent Office (EPO)¹ - Ministry for Higher Education, Research and Innovation (MESRI), 2019² - Trade Organization of Medical Devices Businesses - LEEM³ - European Federation of Pharmaceutical Industries and Associations - EFPIA⁴ - French National Institute for Statistics and Economic Studies - INSEE⁵ - The 2018 EU industrial R&D investment scoreboard⁶ - PricewaterhouseCoopers (PwC)⁷ - National Association of the Medical Technologies Industry - SNITEM⁸

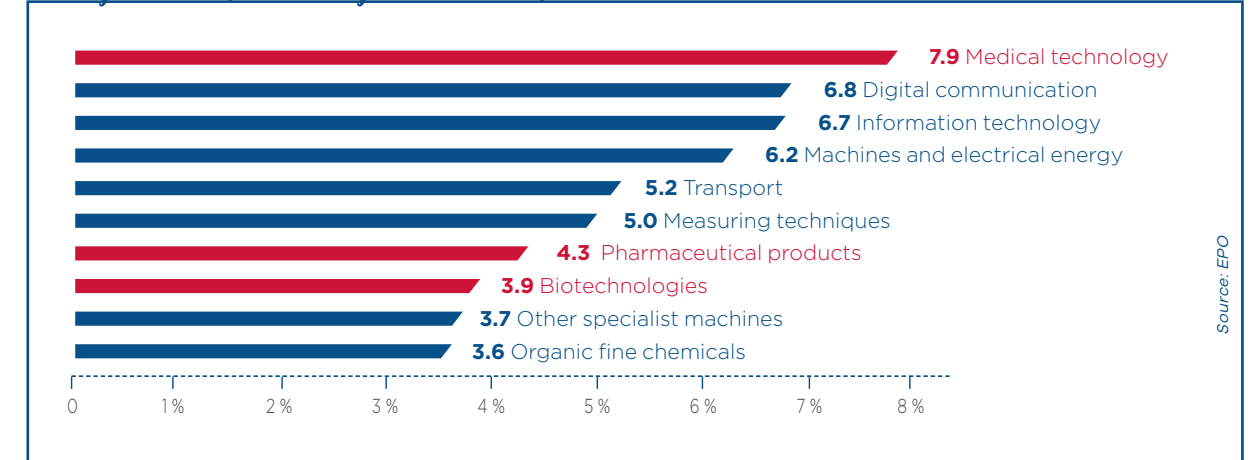
Top 25 French businesses to have invested in R&D (2018)



Change in BERD and GERD in France Index (base 100 = 2000)



Leading sectors of patent filings with the European Patent Office (2018)



A COUNTRY WHERE IT'S GOOD TO INNOVATE

France has very generous state funding for R&D, with tax breaks such as the research tax credit, innovation tax credit and the innovative new companies status, but also innovation funding programs such as the Major Investment Plan. France has the highest R&D spending tax subsidy rate in OECD countries, thanks to the implementation of the research tax credit.¹

The research tax credit (*crédit d'impôt recherche - CIR*) is a tax-incentive scheme to support research that is open to companies of any size and from any sector. The tax credit amounts to **30% of R&D expenses up to €100 million** and 5% of expenditure above this threshold. Eligibility for the research tax credit was extended in 2013 to encompass innovation spending by SMEs claimed back through the **innovation tax credit (20% rate up to €400,000)**: the expenses in question must go towards the design of prototype or pilot versions of new products. **France's research tax credit can be used against eligible R&D expenditure up until market approval or CE marking for medical devices. More than nine in 10 biotech businesses declared having used the research tax credit in 2017.**²

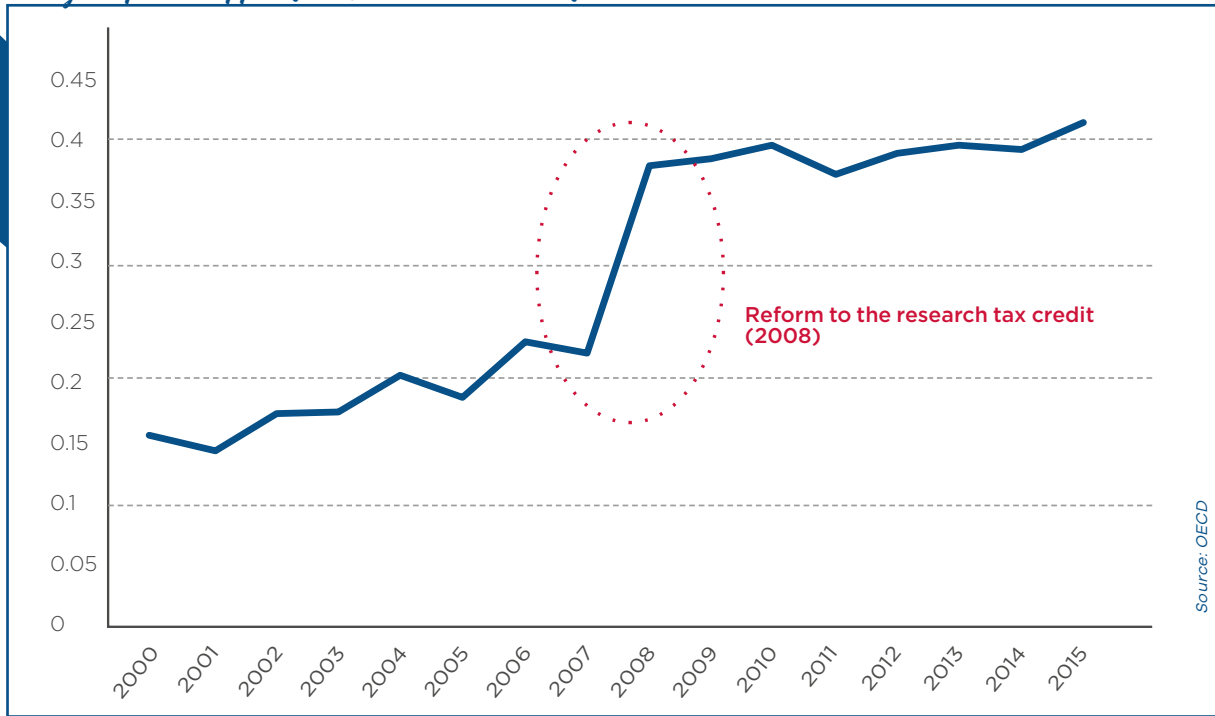
The "innovative new company" status (*jeune entreprise innovante - JEI*), introduced in 2004, offers a variety of tax and social security relief (such as partial exemption from corporate tax and capital gains, and complete exemption from certain employer social security contributions) to SMEs that are less than eight years old and devote at least 15% of their total spending to R&D.

The Major Investment Plan (*Grand Plan d'Investissement - GPI*) takes on the work of the National Investment Program focusing on innovation, such as the innovation contest, support for collaborative research, and several funds operated by Bpifrance to strengthen the French venture capital market in certain segments. It corresponds to a €57 billion investment program centered on four priorities, including anchoring competitiveness to innovation and building a digital state. **This major investment program notably includes a provision of €5 billion to fast-track the digitization of the healthcare and social cohesion system.**

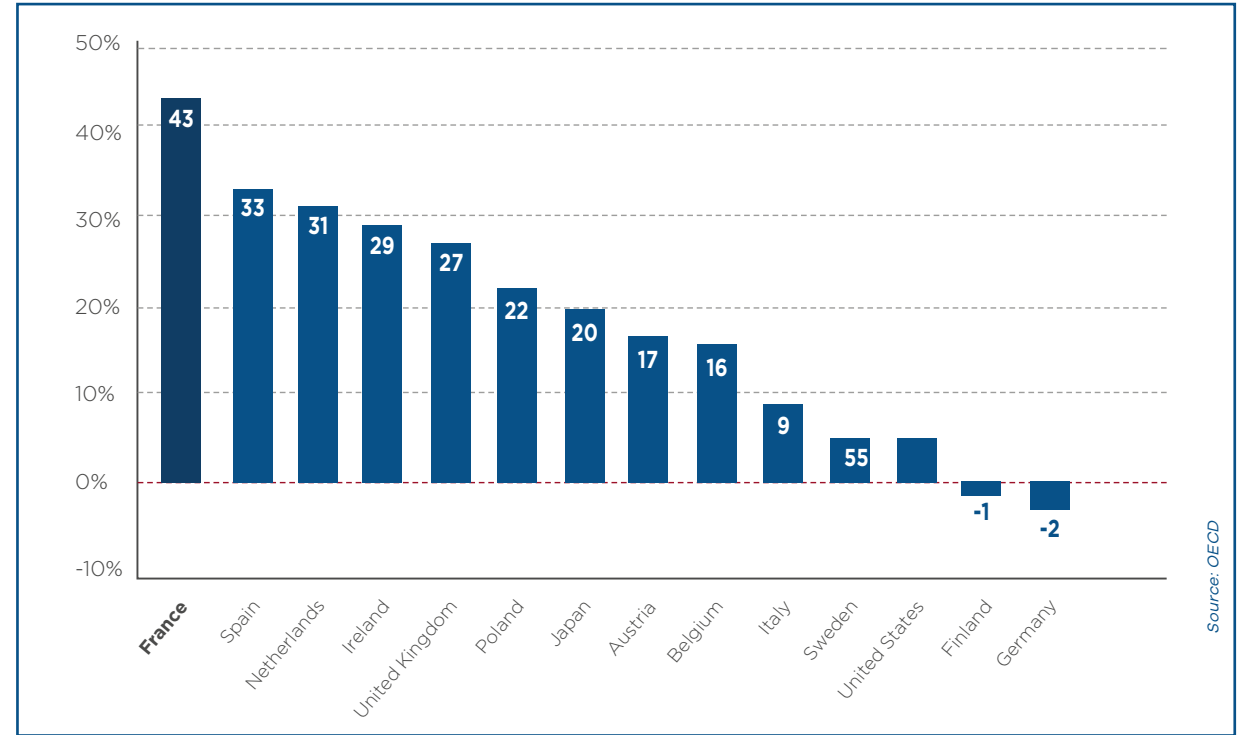
Gross domestic expenditure on R&D in France was multiplied twofold between 2000 and 2017, growing more strongly than business enterprise R&D expenditure.

OECD¹ - France Biotech²

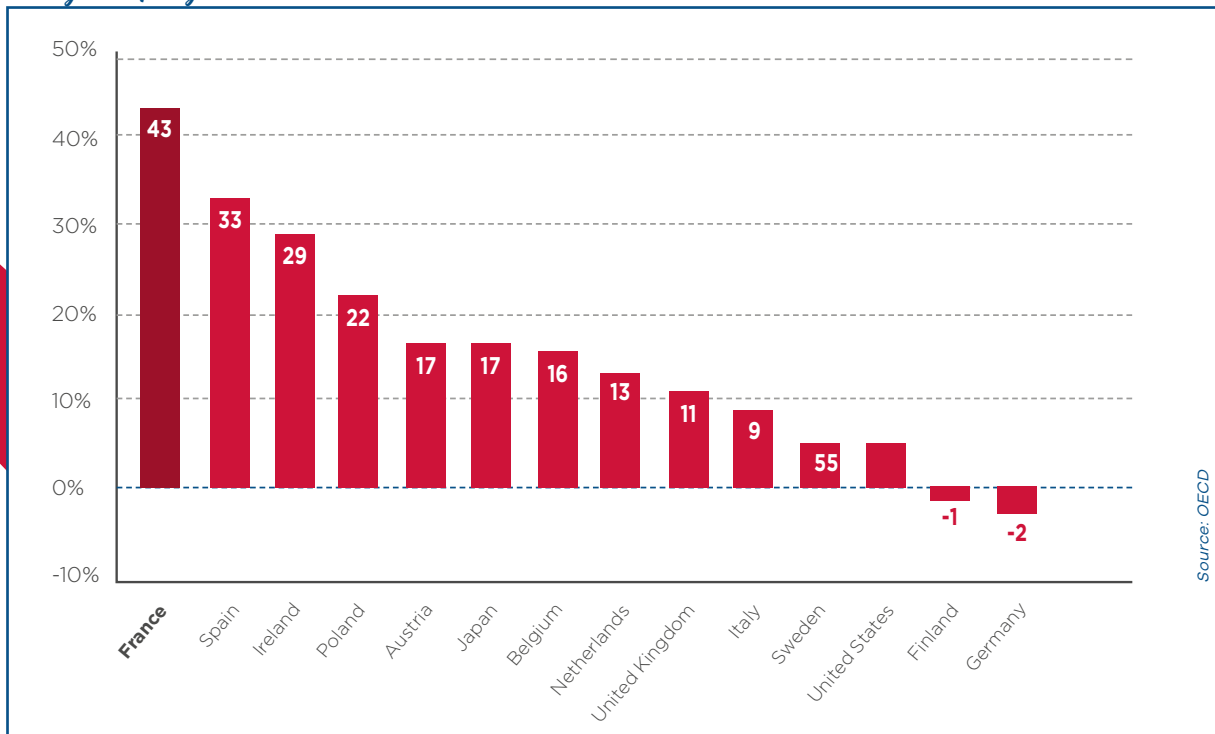
Change in public support for R&D in France in % of GDP



R&D tax subsidy rate in SME beneficiaries (2018)



R&D tax subsidy rate in large company beneficiaries (2018)



METHODOLOGY

The R&D tax subsidy rate corresponds to the theoretical level of tax support per additional monetary unit of R&D spending for which businesses (SMEs or large companies) are eligible.

FRANCE:



#1 country for R&D subsidies within OECD countries thanks to the research tax credit, covering 30% of R&D expenses up to €100 million

*Source: OECD

A MARKET AT THE HEART OF EUROPE

Innovation clusters play a key role in attractiveness and innovation policies by encouraging partnerships between research organizations and business. In healthcare sectors, there are numerous innovation clusters spread throughout the country.

France has **six innovation clusters specifically dedicated to the healthcare**, medical biotechnology and medical devices sectors: Lyon Biopôle, Medicen, Biovalley France, Atlanpole Biothérapies, Eurobiomed and

Nutrition Santé Longévité, which bring together 1,300 members, including 1,000 SMEs.

A large number of other innovation clusters are involved in the medical devices sector, such as the European Center of Ceramics in Limoges, Minalogic in Grenoble which specializes in digital technologies, and Optitec, a cluster focusing on photonics and imaging, located in Marseille.

Some support structures take the form of business mini-clusters (such as Pôle des technologies médicales and Eurasanté), clusters (I-Care, Polepharma), technology clusters (Pôle technologique de Haute-Champagne) or federations (National Association of the Medical Technologies Industry – SNITEM).

Innovation clusters specializing in medical biotechnologies



Several professional organizations support healthcare businesses in France:

- **LEEM** (Trade Organization of Medical Devices Businesses) in the pharmaceutical sector. www.leem.org
- **SNITEM** (National Medical Technology Industry Association) in the medical devices sector. www.snitem.fr
- **France Biotech**, which brings healthtech businesses together. www.france-biotech.fr
- **SIDIV** (In Vitro Diagnostics Industry Association) www.sidiv.fr

Funds financing innovation healthcare

Announced at the 8th Strategic Council for Healthcare, the venture capital fund **InnoBio II** is designed to invest in businesses proposing innovative services close to or at the start of their development in all healthcare fields (biopharmaceuticals, medical devices, e-healthcare, etc.). This fund initiated by Bpifrance and Sanofi, along with other healthcare players such as Boehringer-Ingelheim, Ipsen, Takeda and Servier, aims to grow to between €150 and €200 million.

The **FABS biotechnology healthcare accelerator fund**, implemented as part

of the government's National Investment Program, has a budget of €250 million, of which €170 million will be redeployed to cover all medical technologies. This investment fund is dedicated to developing innovative businesses or for research projects developed by the National Investment Program. It intervenes in seed capital, venture capital and as a hedge fund.

The **innovative biotherapy and rare diseases fund** is a seed fund focusing on businesses in the innovative therapies field targeting rare diseases.

EARLY ACCESS TO INNOVATIONS

France is one of the world's leading players in clinical research. Between 2015 and 2017, it took part in 12% of industrial trials initiated in the world, the fourth highest participation rate in Europe. **France stands out particularly in oncology, as it hosted nearly one in five clinical trials worldwide over this period** and took part in nearly one in two clinical trials in phase three in this field!

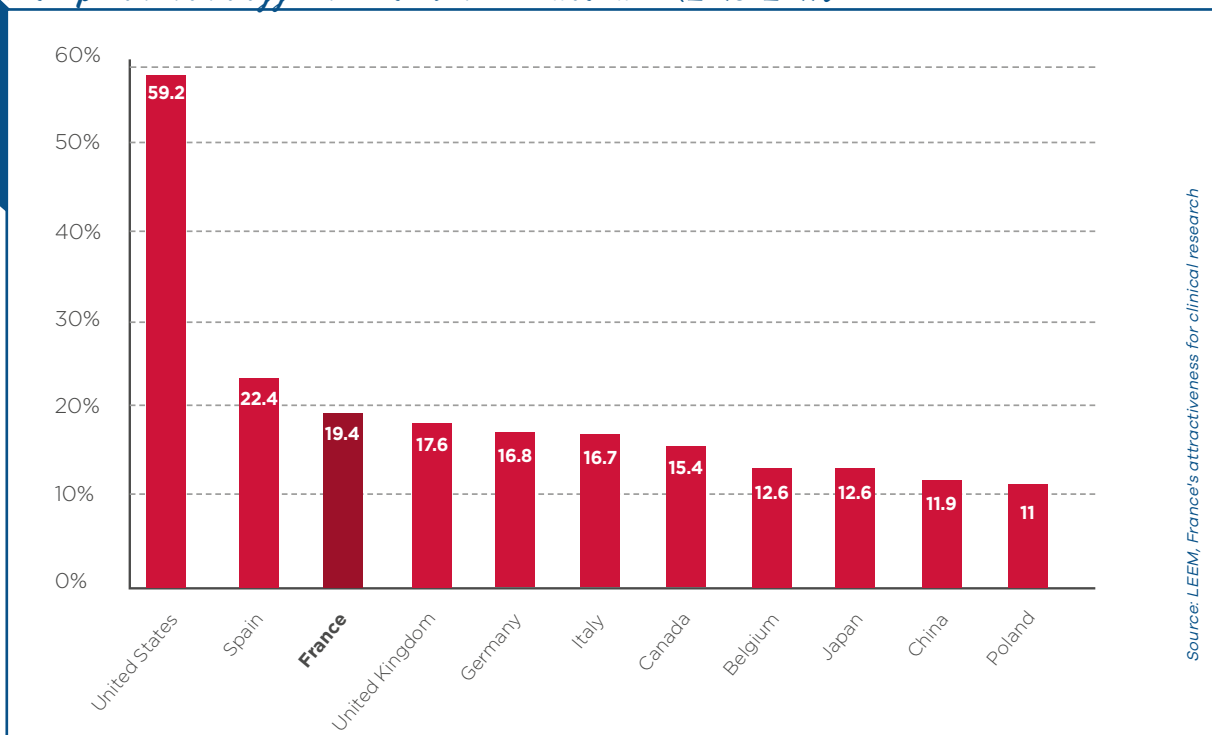
In 2018, the French Agency for Medicinal and Healthcare Products (*Agence nationale de sécurité du médicament et des produits de santé* - ANSM) implemented a revision plan of authorization procedures for clinical trials to reduce the response times for these authorizations

and to make France a more attractive country for clinical trials.

Temporary use authorizations (*autorisations temporaires d'utilisation* - ATUs) is a French scheme allowing early access to new, innovative medicinal products before their marketing authorization (*autorisation de mise sur le marché* - AMM) is granted to patients suffering from serious or rare illnesses for which no alternative therapy exists. **This virtually unique scheme in Europe enables rapid access to the most promising medicinal innovations** several months or even several years before marketing authorization is granted. Medicinal products which are granted for temporary use are reimbursed by the statutory health insurance system.

Source: LEEM, France's attractiveness for clinical research!

Participation in oncology clinical trials initiated worldwide (2015-2017)



FRANCE, A HEALTHTECH COUNTRY AT THE FOREFRONT OF INNOVATION

France has 18 biotech/medtech startups per million inhabitants, more than the United States (10) and the United Kingdom (13).1

Young French entrepreneurs in the healthcare sector have often received awards.

Yann Fleureau, the co-founder and CEO of Cardiologs, an artificial intelligence startup which analyzes electrocardiograms, has been named among the Innovators Under 35 list by MIT Technology Review and European Innovator of the Year 2018. In 2019, 10 French healthcare startups received an innovation award at the Consumer Electronics Show (CES), including the brain training solution for better sleep developed by Urgotech.

Among the 10 SMEs that have filed the most patents in France with INPI in 2018, there are two healthtech businesses. Distraimed, which proposes a secure pill organizer enabling better observance of patients during treatment; and BioSerenity, which has designed a piece of smart clothing aiming to more closely follow and diagnose epilepsy.

Founded in 2015, **Diabeloop** has developed an "artificial pancreas", a system for automatically managing diabetes type 1, comprising a glucose measuring cell and an insulin pump that are controlled by artificial intelligence. Diabeloop belongs to two innovation clusters, Medicen Paris Region and Minalogic in Grenoble (Auvergne-Rhône-Alpes), and has developed a technology partnership with the French Atomic Energy and Alternative Energy Commission (CEA). The innovative new company, based in Grenoble, obtained CE marking in November 2018, enabling its device to be marketed across Europe.

Nanobiotix proposes new therapeutic approaches to cancer treatment, and has developed a solution by which nanoparticles of cancerous cells can be injected prior to the first radiotherapy session to extend the action. Nanobiotix obtained CE marking in 2019 for its soft-tissue sarcoma treatment, and studies are

now underway to expand this solution to the treatment of other types of cancer.

Specializing in the medical imaging by ultrasounds sector, **SuperSonic Imagine** has developed a technology allowing doctors to visualize and analyze tissue hardness in real time using a non-invasive procedure, which remains a key advantage for diagnosing potentially malign lesions or other ill tissue. SuperSonic Imagine, which has been listed on Euronext since April 2014, is based in Aix-en-Provence (Provence-Alpes-Côte d'Azur) and has operations in more than 30 countries.

Orange Healthcare launched an e-health startup support program in 2019. Prize-winning businesses enjoy access to cut-price healthcare data hosting, as well as software solutions from its subsidiary Enovacom, and support in the field of communication.

The Parisian startup **Wandercraft** has developed Atalante, an exoskeleton that can give back autonomy and mobility to people in wheelchairs. It works in conjunction with several academic institutions such as the University of Michigan and the California Institute of Technology in the United States, MinesParisTech and the French National Center for Scientific Research (CNRS) in France. Its first version has been designed to be used in reeducation centers. In May 2019, the company obtained CE marking enabling it to market across the European Union, and received the Robot of the Year in 2018.

The online healthcare insurance startup **Alan**, created in 2016, raised €40 million in February 2019. Alan insures nearly 30,000 people in France, mainly independent workers and employees of micro-businesses and SMEs. By 2020, the business aims to insure 100,000 people and to multiply its revenues by five.

Pixium Vision develops innovative methods to restore vision, using implantable medical devices designed to cure blindness caused by the degeneration of photoreceptor cells in the retina. These devices are designed for blind patients whose optical nerve remains functional. The business won the Prix Galien 2018 in the category "Research Work".

H4D is a French company specializing in designing telemedicine solutions. It has developed the Consult-station, a telemedicine cabin equipped with around thirty medical measuring instruments through which video-conference consultations can be held with general practitioners and health check-ups can be carried out. The organizations using this solution include accommodation establishments for elderly people requiring full-time care, hospitals and other businesses. H4D is present in seven countries, including the United States.

FRANCE, AN ATTRACTIVE COUNTRY

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FRANCE, AN ATTRACTIVE COUNTRY

In 2018, France welcomed a record number of investments, with 1,323 job-creating foreign investment projects being recorded by Business France.

FRANCE IS AN OPEN COUNTRY

With 28,600 foreign businesses set up, employing more than two million people and carrying out 21% of R&D expenses and 31% of exports, France's attractiveness is particularly strong in industry, where for more than 15 years it has been the leading recipient of foreign industrial investment in Europe (EY), and 80% of foreign investors believe that French industry is attractive (Kantar Public - Business France survey).

Between 2014 and 2018, some 320 job-creating foreign investment projects were recorded in the healthcare industry in France. These projects were evenly distributed between the

pharmaceuticals and biotechnologies sector and the medical devices sector. More than half of these projects came from four countries: the United States (29% of projects), Germany (12%), Italy (9%) and Switzerland (8%).

The high proportion of R&D projects (24%) confirms the perception of France as a country suitable for innovation in the healthcare industries.

Projects were mainly located in Ile de France / Paris region (26% of projects), Auvergne-Rhône-Alpes (14%) and the Grand Est region (12%). In some of these regions, investments in these sectors represented a significant share of all investment projects, for example in the Centre-Val de Loire region, projects in healthcare sectors represented more than 14% of all projects recorded in the last five years.

FRANCE'S ATTRACTIVENESS AT A RECORD HIGH

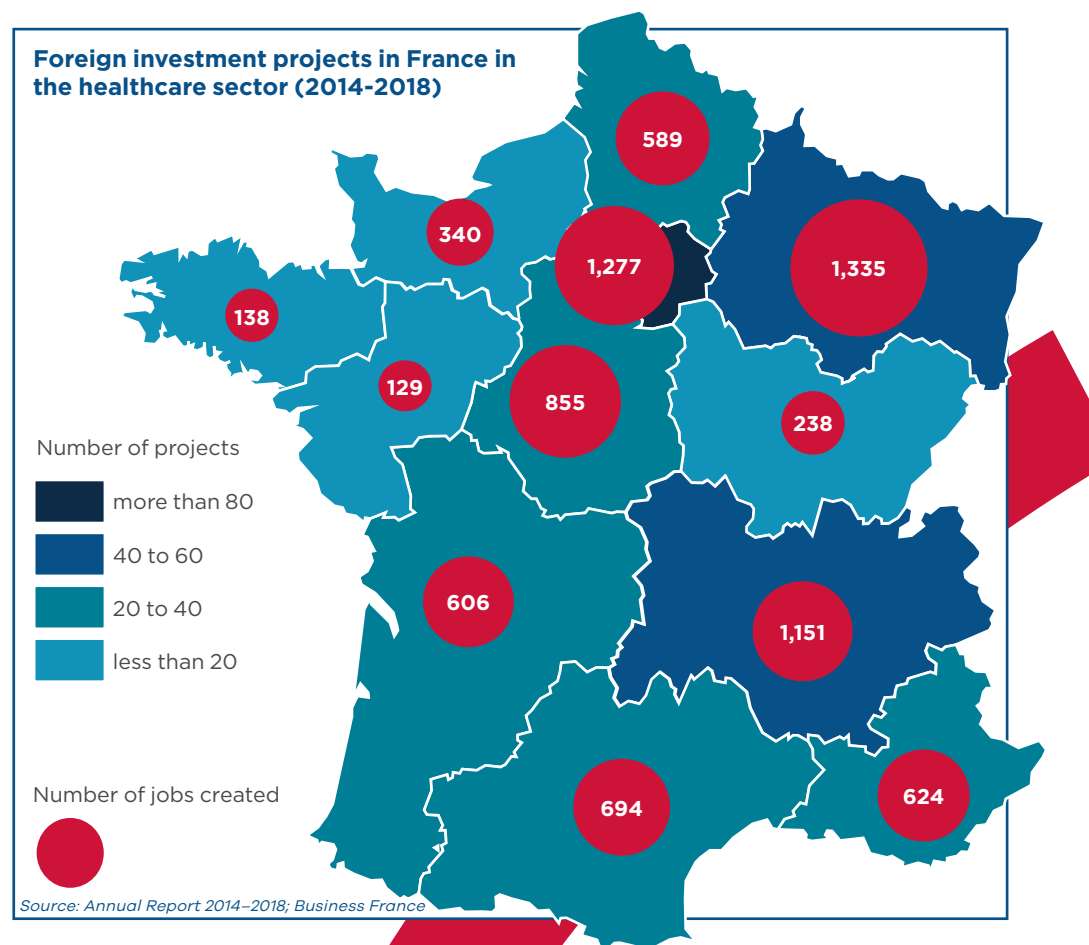
1,323 job-creating foreign investment projects received in 2018
28,600 foreign businesses
Leading host country of foreign industrial investment in Europe

**Source: Business France*



320 job-creating foreign investment projects between 2014 and 2018
One project out of four in R&D

**Source: Business France*



**FRENCH HEALTHTECHS
RAISE FUNDS**

French businesses raised €3.525 billion between 2016 and 2018, making France the second leading country in Europe, after the United Kingdom and ahead of Switzerland. Moreover, France is the leading European country for companies financed by venture capital in 2017.¹

With more than 90 quoted healthtech businesses (66 of whom are French), with a market capitalization of around €23 billion, **Euronext is the leading European market for businesses in the sector.** In 2018, two French healthtech businesses were listed in Paris: **Voluntis**, founded in 2001, which designs digital therapy software aiming to support patients during treatment, raised €30 million; while Montpellier-based business **MedinCell**, specializing in developing long-lasting therapeutic injectable products, also raised €30 million on the Euronext market in Paris.

Numerous healthtech startups are among the largest French fundraisers in 2018.

Dynacure, which develops treatments for patients with rare diseases, raised €47 million, while **Quantum Surgical** collected nearly €43 million to democratize mini-invasive treatment of liver cancer and **Enyo Pharma**, which develops therapeutic molecules to fight acute and chronic viral illnesses, raised €40 million.

Founded in 2015, **Dental Monitoring**, which proposes artificial intelligence tools for dentistry and orthodontics, raised €45 million through European fund Vitruvian Partners in the first quarter of 2019.

Finally, **Doctolib**, an online medical appointment management service linking patients and healthcare professionals, raised €150 million in March 2019 with French and foreign investors in a funding round led by the American firm General Atlantic. **Doctolib has thereby entered into a very selected circle of ‘unicorns’, or startups valued at more than €1 billion.**

FRANCE STANDS OUT IN INTERNATIONAL RANKINGS FOR THE QUALITY OF ITS RESEARCH AND ITS INNOVATION CAPACITY

In the IMD World Competitiveness Yearbook 2018, **France is ranked among the 10 leading countries in the world for numerous indicators relating to the quality of its research.** France stands out in terms of the number of Nobel Prizes won since 1950 (4th), qualified engineers available in the labor market (3rd), the total number of R&D personnel (7th), private R&D spending (6th), the number of patents filed (6th), and the respect and implementation of intellectual property rights (10th).

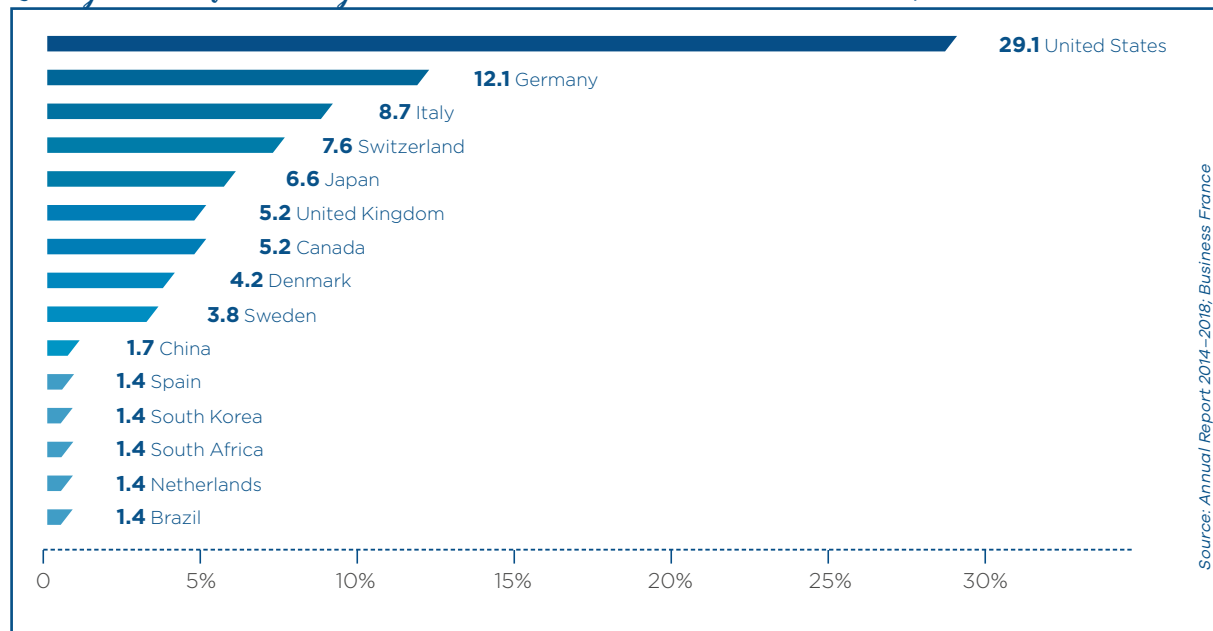
In the WEF Global Competitiveness Report 2018, **innovation also holds a special place in France, which is ranked fourth in the world for R&D**, with renowned scientific institutions (3rd), a large number of quality scientific publications (5th), businesses that invest strongly in R&D (13th) and file patents (12th).

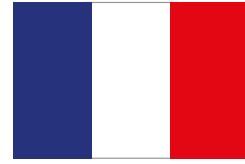
Furthermore, the AmCham Bain survey in 2019 shows that 65% of American investors in France consider that the priority given to R&D is a strong point compared with other European countries, with this value rising to 67% for qualification levels of the workforce.

The quality of healthcare infrastructures in France is acclaimed, with the country ranked 10th under this indicator in the IMD World Talent Report.

France is among the main drivers of global innovation. After having seduced Facebook, which opened its first research center of artificial intelligence outside the United States in Paris in 2015, Google and Microsoft both announced their intention to create dedicated artificial intelligence centers in Paris which will work with others in the healthcare industry.

Leading countries for investing in France in the healthcare sectors (2014-2018), %





THEY CHOSE FRANCE



NOVARTIS

In the last five years, Swiss business Novartis has carried out and announced very important investment projects in its French industrial plants, consolidating its presence in France. In 2016, it carried out an expansion of its site in Huningue (Grand Est region), building a state of the art biosimilar production facility, after a financial investment of more than €100 million, and the creation of around a hundred jobs.

In 2018, Novartis decided to concentrate its activities producing innovative medicinal products and followed up these investments, acquiring the French Advanced Accelerator Applications (AAA) laboratory and CellforCure.

Novartis announced investment projects totaling €800 million at the first Choose France summit in January 2018. The five production sites in France will benefit from this new investment and will see their production activities grow.



ASTRAZENECA

Anglo-Swedish business AstraZeneca has invested on a number of occasions at its regional site in Dunkirk (Hauts de France) over the last five years, which was founded in 1991 to produce inhalers to treat asthma as well as chronic obstructive pulmonary disease, and employs more than 450 people.

A major reinvestment of €135 million was announced in 2017, expanding production activity of medicinal products at the site. The aim is to produce a very high value-added production process concentrating on inhalation technology. The Dunkirk-based plant will therefore become a worldwide benchmark for the production of inhaled medicinal products, 90% of whose products will be exported to the United States.



PANAXIUM

The French subsidiary of Panaxium opened its first R&D center in Europe in August 2016 near Aix-en-Provence (Provence-Alpes-Côte d'Azur region), where it develops bioelectronic devices capable of following and even acting on the nerve and electrical impulses of the human body. Miniaturized cell-scale implants aim to deliver nerve electrical signals to treat a number of diseases or conditions, such as Parkinson's, Alzheimer's, brain injuries and peripheral nerve damage.

The R&D center currently has 21 employees and is made up of a multidisciplinary team of scientists, including world-class experts in organic bioelectronics and leaders in the fields of chemistry, materials science, electrical engineering, systems design, electronic engineering, data science, biochemistry and nanotechnology.



CURA GLOBAL HEALTH

Cura Global Health is an American biotech startup that has developed a fermentation process that allows for the high incorporation of essential nutrients into dietary supplements.

In 2018, the company relocated its headquarters from Iowa, USA, to Avignon, Provence-Alpes-Côte d'Azur region, France, to strengthen its partnership with Naturex, the Provence-Alpes-Côte d'Azur-based global leader in natural ingredients. This is the company's first European base, which will serve as a global decision and R&D center, with the investment leading to 12 new jobs.



ASPEN HOLDINGS

After having invested in R&D at its site in Notre Dame de Bondeville (Normandie region), with the creation of a center of excellence in thrombosis in 2016, South African pharmaceutical company Aspen has invested €100 million in its facility producing sterile injectable drugs.

The site now has a new line of injectable products, as well as new buildings and a third filling line for antithrombotic drugs. These investments will lead to around a hundred new jobs.



NOVO NORDISK A/S

Danish pharmaceutical company Novo Nordisk, specializing in the treatment of diabetes, carried out a new investment worth €100 million at its site in Chartres (Centre-Val de Loire region). This new investment will enable a new generation of insulin pens to be produced, creating 250 jobs.



MERCK KGAA

Merck KGaA employs 3,300 people in France at 10 sites. The Millipore site, acquire in 2010, has more than 1,000 employees. In 2018, Merck KGaA invested at its site in Martillac (Nouvelle Aquitaine), leading to the creation of 100 jobs in R&D and 56 in logistics.

EXPERTISE GOING GLOBAL

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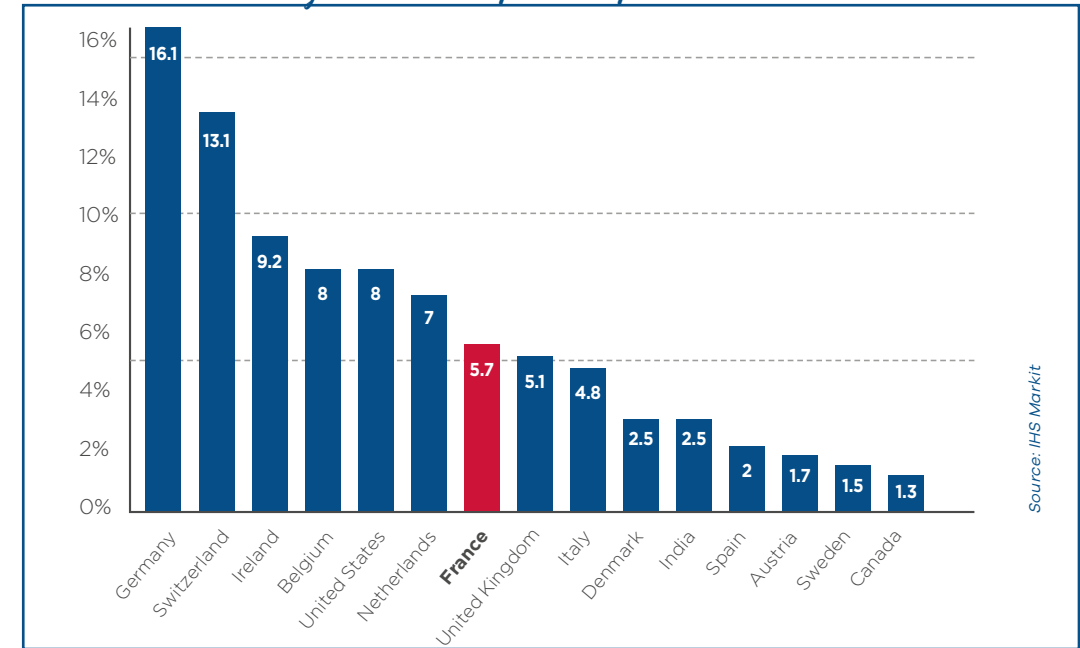
COMPANIES WITH A STRONG
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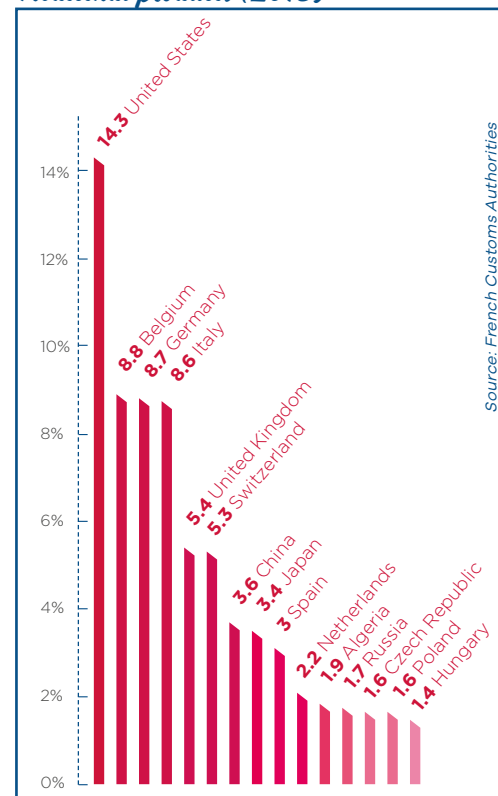
EXPERTISE GOING GLOBAL

In 2018, healthcare industries in France were responsible for more than €35 billion of exports, or 7.4% of all French goods exported, with medicinal products presenting a large positive trade balance, accounting for three-quarters of all French exports.

France's market share in global medicinal product exports (2018)



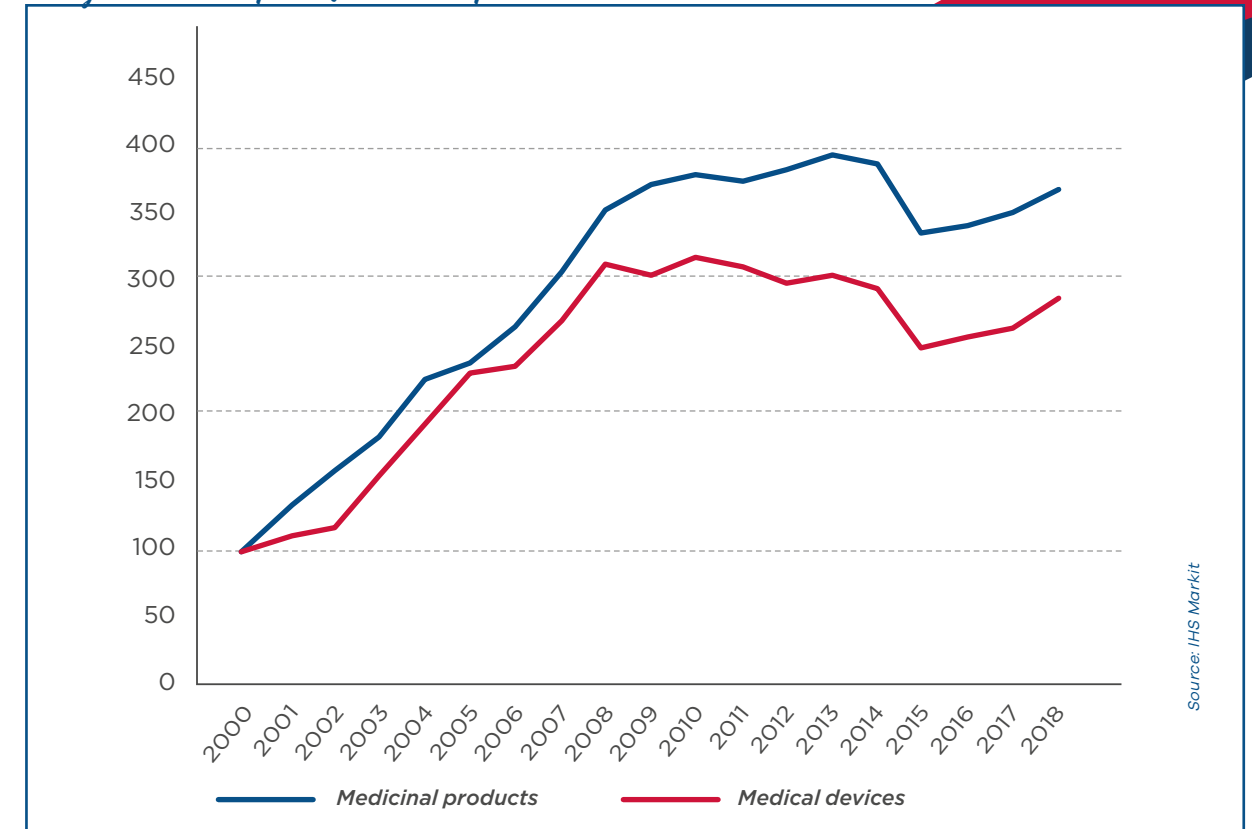
France's main clients for medicinal products (2018)



FRENCH EXPORTS OF MEDICINAL PRODUCTS

French exports of medicinal products amounted to €27 billion in 2018, up more than 2% from 2017. Half of these exports were destined for the European Union. The leading destination for French exports was the United States, accounting for 14% of value exported, followed by Belgium and Germany (9% each). France was the world's seventh exporter of medicinal products in 2018, accounting for 5.7% of global exports in this sector. **France stands out particularly in the field of vaccines, where it was the world's fourth leading supplier of vaccines for human medicine in 2018**, and was responsible for 13% of global exports worth €3.2 billion. **The medicinal products sector has a balance of trade well in excess of €7.7 billion, including €2.3 billion from the sale of vaccines.**

Change in French exports of healthcare products (base 100 = 2000)



FRANCE, A LEADER IN THE FIELD OF VACCINES

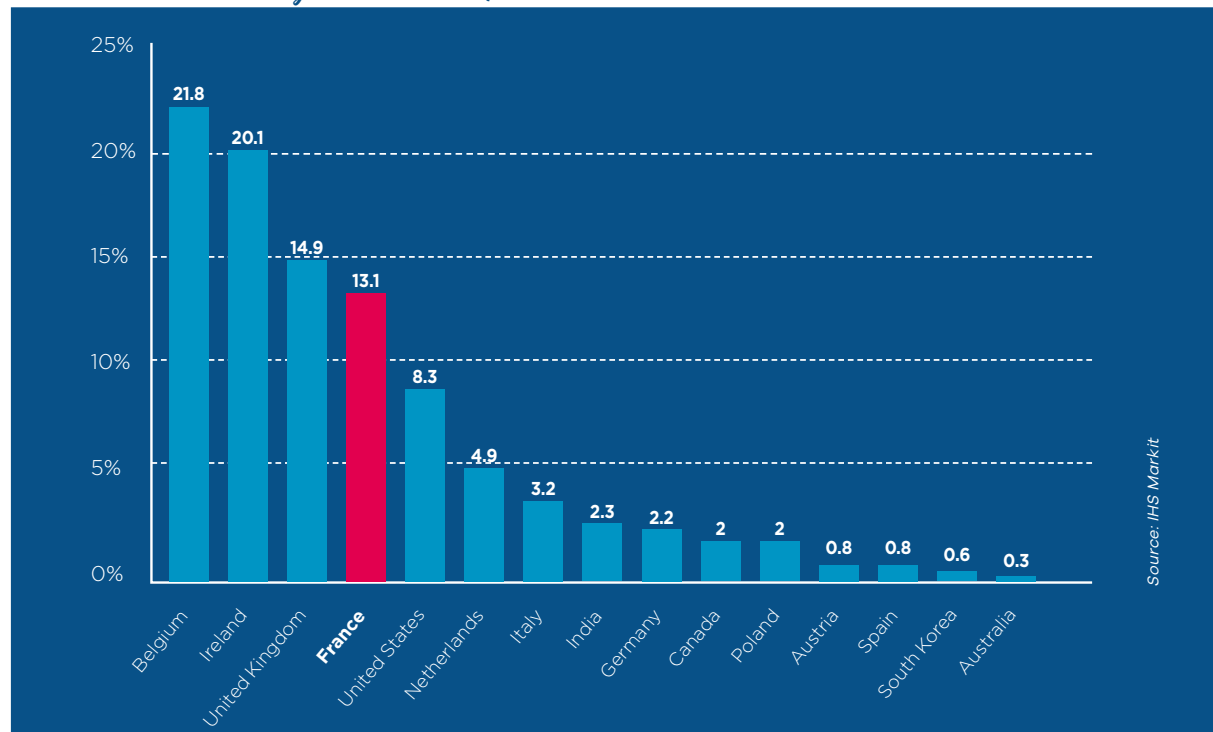
France is the world's fourth largest exporter of vaccines destined for human medicine, and the third leading exporter of veterinary vaccines.

France has world-renowned institutions, such as the Institut Pasteur International Network. Present in 26 countries across all continents, it brings together 23,000 people within 33 establishments conducting 768 projects and plays a major role in the fight against emerging infectious diseases worldwide.

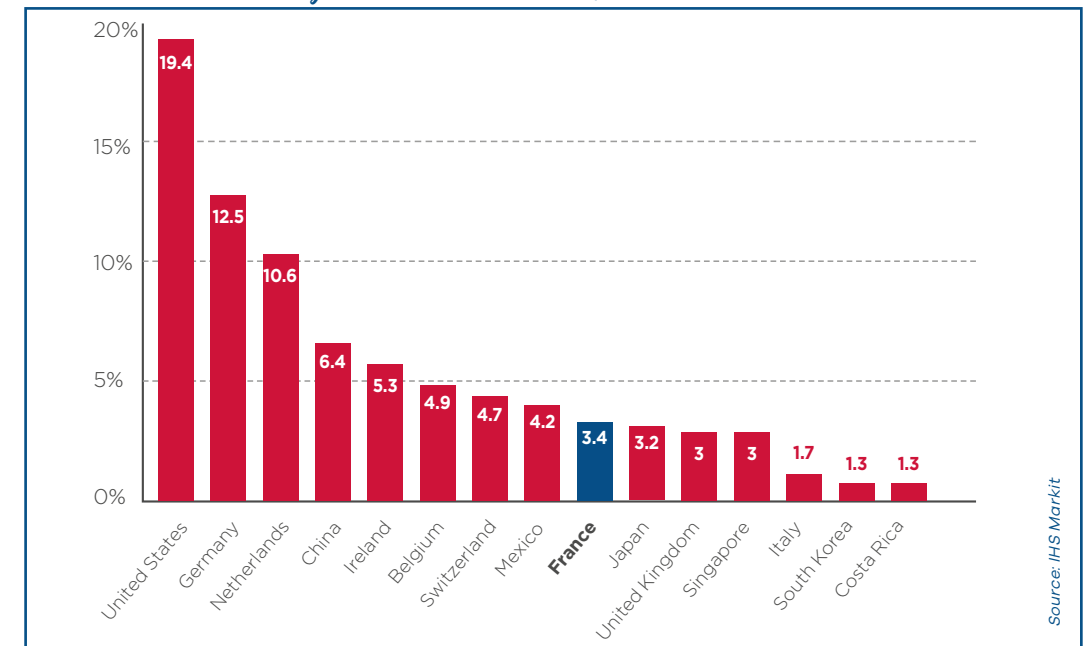
FRENCH EXPORTS OF MEDICAL DEVICES

Exports of medical devices from France approached €7.5 billion in 2018, up 2.2%. As for medicinal products, Europe is the destination for the majority of these sales. France's leading customers include the United States (12% of exports), Germany (12%) and the Netherlands (11%). France carried out 3.4% of global exports of medical devices, and was ranked as the ninth supplier country.

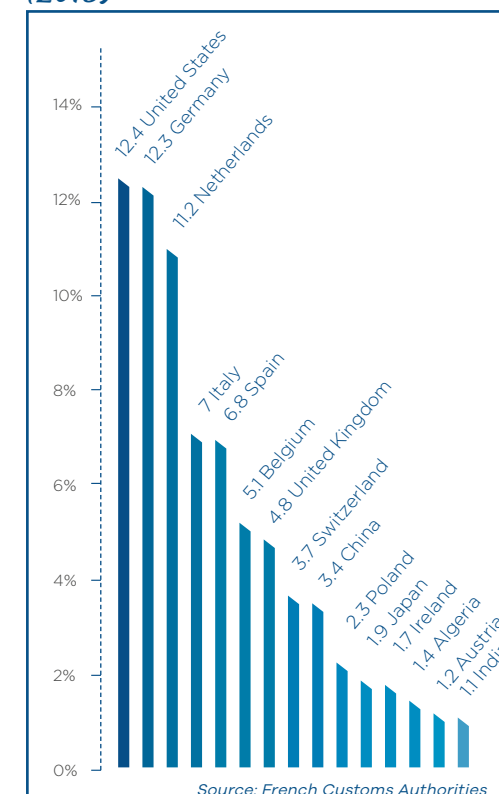
France's market share in global vaccine exports (2018)



France's market share in global medical devices exports (2018)



France's main clients for medical devices (2018)

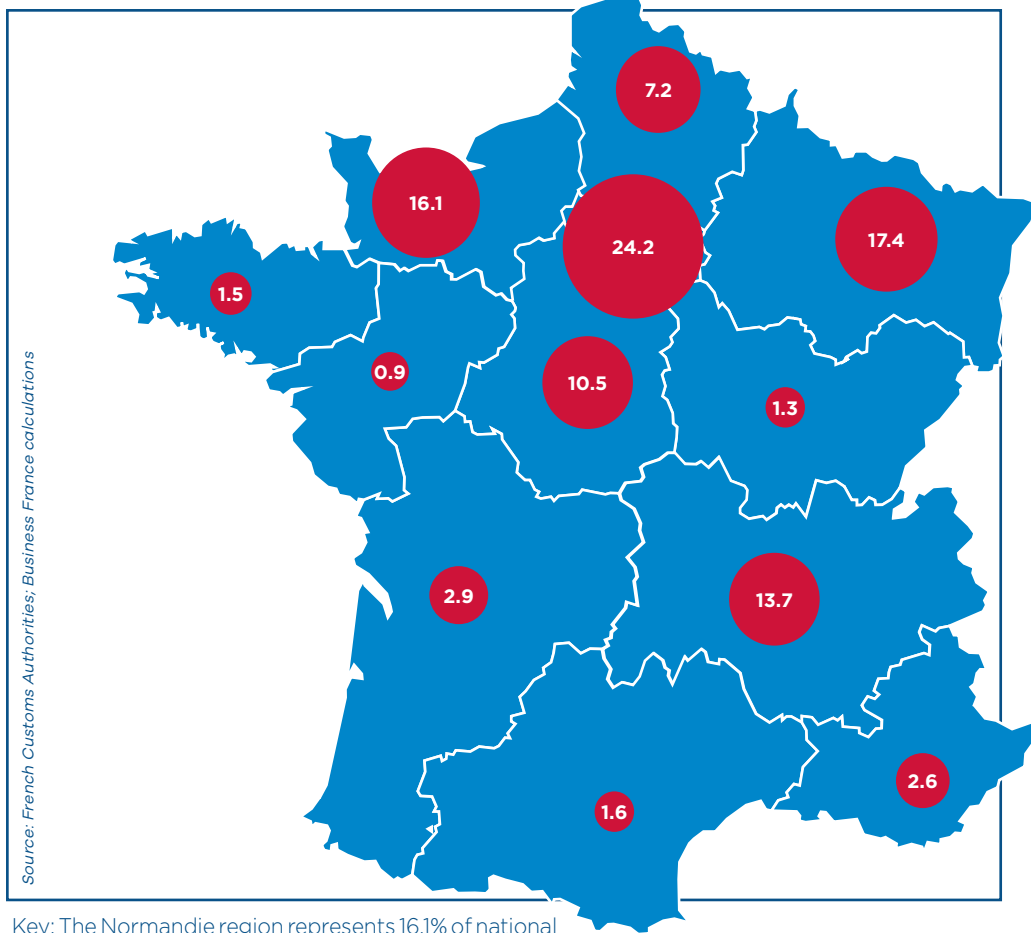


REGIONAL BREAKDOWN OF FRENCH EXPORTS

French exports of healthcare products are concentrated in a limited number of regions. Five regions - Ile de France (Paris region), Normandie, Grand Est, Auvergne-Rhône-Alpes and Centre-Val de Loire - account for three-quarters of French exports from this sector.

Some French regions have a very important specialization in their exports of healthcare industry goods, amounting to 19% of value exported in the Centre-Val de Loire region and 17% in Normandie, when this proportion amounts to 7.4% nationwide.

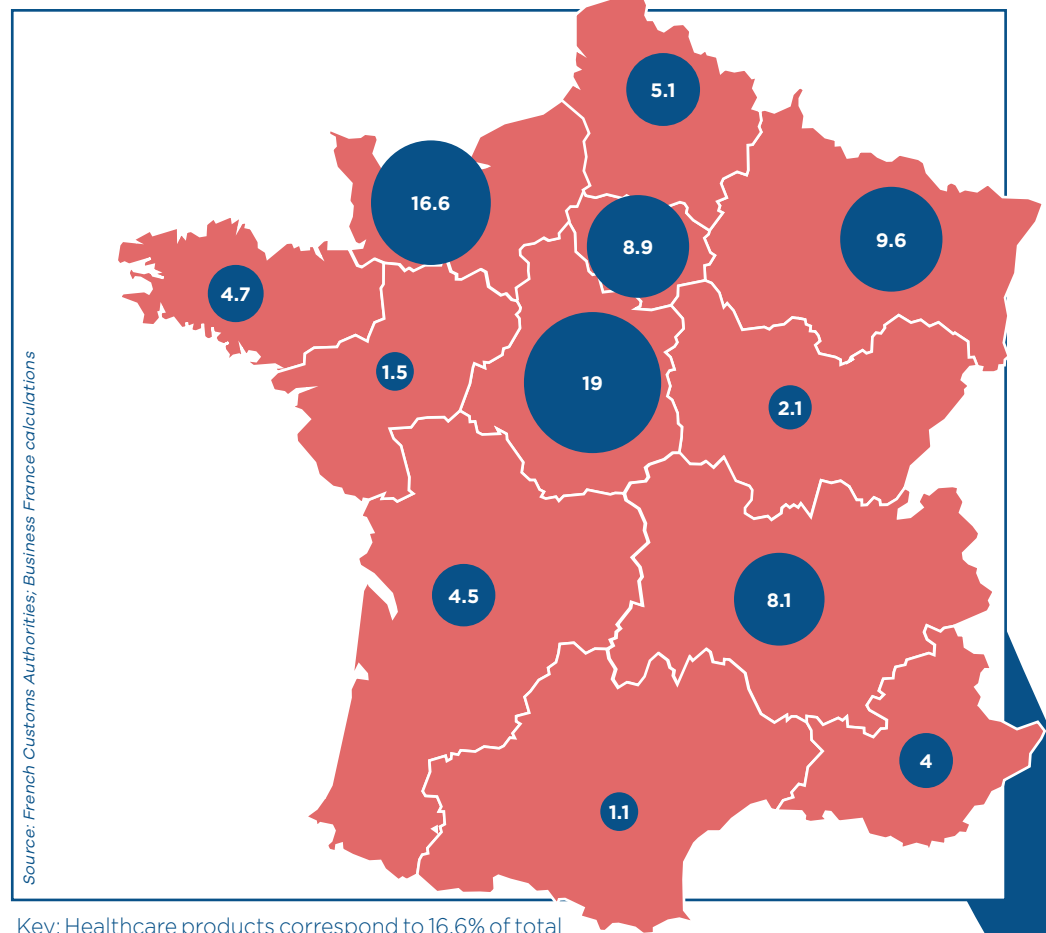
Share of region in national healthcare goods exports, %



Key: The Normandie region represents 16.1% of national healthcare exports.

Source: French Customs Authorities; Business France calculations

Share of healthcare in regional exports, %



Key: Healthcare products correspond to 16.6% of total exports from the Normandie region.

Source: French Customs Authorities; Business France calculations

COMPANIES WITH A STRONG INTERNATIONAL PRESENCE



SERVIER

France's second-largest pharmaceutical company operates in 149 countries and generated revenues of €4.2 billion in 2017/2018, of which more than 60% came from international sales. The group employs 22,000 people worldwide, with 5,000 based in France, where Servier has two research institutes, two factories and an international center for therapeutic research. R&D is an important sector for the group, with Servier investing nearly €800 million in it in 2017/2018. Servier employs 2,200 people in R&D in France, with 33 drug candidates under development.



THUASNE

Founded in 1847, this medwear company is a global leader in orthopedics. The mid-size company employs 2,200 people and has a strong international presence, operating in 85 countries and with 14 manufacturing sites across Europe and the United States. In 2017, it generated revenues of €250 million, of which 40% came from international sales. Over the last 25 years, the group has seen significant growth internationally, having set up subsidiaries in many European countries, as well as in the United States and Algeria, and having acquired several foreign companies.



CHIESI

Italian pharmaceutical group Chiesi, which specializes in the treatment of lung diseases, employs 5,000 people worldwide across three production sites and six research centers, with revenues of €1.8 billion in 2018. Chiesi has been in France since 1992, and is present throughout the value chain, with a production facility and R&D center. The French subsidiary, which generated revenues of €120 million last year, is an export platform for the pharmaceutical group since 70% of French production is exported. The Italian company is strengthening its presence in France: in 2018, it acquired food supplement specialist NHCO Nutrition, while in 2019 it announced a new €50 million investment in its production facility in Centre-Val de Loire.



GUERBET

For French company Guerbet, leader in the field of injectable products for medical imaging, operating internationally is a key part of its strategy. More than 80% of its revenues, which amounted to €790 million in 2018, are generated outside France. The company operates in more than 80 countries, with sales subsidiaries and distributors, and employs 2,850 people, including 1,500 internationally. It has industrial sites in Canada, the United States, Brazil, Ireland and France, which is home to almost half of them. In 2018, the company announced a technology partnership with IBM to co-develop clinical decision support solutions based on artificial intelligence.



PIERRE FABRE

Pierre Fabre is a French laboratory specializing in pharmaceutical and dermo-cosmetics. The group generated worldwide sales of €2.3 billion in 2018, with dermo-cosmetics accounting for 56% of sales. Most of this revenue is generated internationally (64%), with the company employing 11,000 people, including 4,500 abroad. Pierre Fabre has subsidiaries in 47 countries and its products are distributed across 132 countries. The company has an ambitious R&D policy, having invested nearly €200 million in 2018, including €120 million in medicines. In this sector, it has filed or is in the process of applying for 2,738 patents.



An innovative initiative promoting French excellence in healthcare

French Healthcare is an innovative initiative aimed at bringing together French businesses, researchers and healthcare professionals to jointly promote their activities, expertise and technologies internationally. **Business France**, the national agency supporting the international development of the French economy, in partnership with the **French Healthcare Association**, is responsible for promoting the brand, which aims to coordinate a team approach to stimulate international cooperation and the influence of France's key strengths. A brand to promote French key strengths worldwide

France has a number of key strengths:

- Global recognition of its public health model and excellent professional training.
- A key player in global healthcare.
- Cutting-edge research and a world-leading pharmaceutical industry.
- An innovative powerhouse in the medical device, animal health, e-health and silver economy sectors, thanks to a dynamic ecosystem for startups and SMEs.

These are all the dimensions that French Healthcare promotes internationally.

A public-private initiative bringing together all stakeholders in the healthcare sector

Developed as part of the French government's strategy for priority export sectors, French Healthcare is an initiative by the Strategic Committee for Healthcare Industries (CSFITS) to improve the visibility of French healthcare exports.

The French Healthcare initiative relies on:

- The Ministries for Europe and Foreign Affairs, Economy and Finance, Solidarity and Health, Higher Education, Research and Innovation.
- Key public stakeholders operating in the health, development and trade sectors (Business France, Expertise France).
- Professional bodies and trade associations.
- Businesses, hospitals, research institutes, innovation clusters and universities.

Practical objectives to promote French healthcare

French Healthcare is dedicated to:

- Promoting the French healthcare ecosystem, with promotional publications and events, publicizing knowledge, products and services.
- Welcoming foreign delegations looking to discover the French healthcare model, expertise and technological solutions.
- Developing and fast-tracking cooperation between French and international stakeholders to improve healthcare systems and access to care, as well as to fight against chronic and infectious illnesses.

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Business France is the national agency supporting the international development of the French economy, responsible for fostering export growth by French businesses, as well as promoting and facilitating international investment in France.

It promotes France's companies, business image and nationwide attractiveness as an investment location, and also runs the VIE international internship program.

Business France has 1,500 personnel, both in France and in 58 countries throughout the world, who work with a network of partners.

Since January 2019, as part of the reform of the state support system for exports, Business France has given private partners responsibility for supporting French SMEs and mid-size companies in the following markets: Belgium, Hungary, Morocco, Norway, the Philippines and Singapore.

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